This paper is being provided in response to the Office Action mailed July 25, 2011, for the above-referenced application. In this response, Applicant has amended claims 4, 6, 7 and 15 to clarify that which Applicant considers to be the presently-claimed invention. Applicant respectfully submits that the amendments to the claims are fully supported by the originally-filed specification, consistent with the discussion herein.

The rejection of claims 4, 6, 7, 15 and 18-22 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,614,422 to Rafii, et al. (hereinafter "Rafii") in view of U.S. Patent App. Pub. No. 2005/0012721 to Fong et al. (hereinafter "Fong") and further in view of U.S. Patent No. 7,263,547 to Kloba (hereinafter "Kloba") and U.S. Patent App. Pub. No. 2002/0171633 to Brinjes (hereinafter "Brinjes") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

Independent claim 4, as amended herein, recites a mobile communication terminal including an image projection means for projecting a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device operated by users. Operation detection means detects operation on the operation-plane image projected by the image projection means. Data processing means performs a predetermined data process based on the detection result of operation detected by the operation detection means. Application execution management means manages execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network, wherein the application execution management means selects the selected one of the plurality of predefined operation-plane images for projection according to

content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. The image projection means projects the selected predefined operation-plane image corresponding to recognition function designated by designation information received from the application execution management means, from among the plurality of predefined operation-plane images. The operation detection means has a plurality of kinds of mutually different recognition functions to recognize operation content by at least one of position, direction and movement of an operation object on the plurality of predefined operation-plane images, and detects operation on the operation-plane image by using the recognition function designated by the designation information received from the application execution management means. At least one of the plurality of kinds of mutually different recognition functions is a handwritten input recognition function that detects movements of the operation object corresponding to a handwriting motion of a user, and wherein, for the designated recognition function being the handwritten input recognition function, the at least part of the selected operation-plane image is changed in a manner that tracks the handwriting motion, wherein the tracking of the handwriting motion is visible on the selected operation-plane image according to the change in the at least part of the selected operation-plane image being projected. Claims 12 and 13 depend directly or indirectly from independent claim 4.

Independent claim 6, as amended herein, recites a mobile communication terminal including an image projection means for projecting a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device operated by users. Operation detection means detects operation on the operation-plane image projected by the image projection means. Data processing means performs a predetermined data process

based on the detection result of operation detected by the operation detection means. Application execution management means manages an execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network, wherein the application execution management means selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. The image projection means projects the selected predefined operation-plane image corresponding to the recognition function designated by the designation information received from the application execution management means, from among the plurality of predefined operation-plane images. The operation detection means has a plurality of kinds of mutually different recognition functions to recognize operation content by at least one of position, direction and movement of an operation object on the plurality of predefined operation-plane images, and detects operation on the operation-plane image by using the recognition function corresponding to the operation-plane image designated by the designation information received from the application execution management means. At least one of the plurality of kinds of mutually different recognition functions is a handwritten input recognition function that detects movements of the operation object corresponding to a handwriting motion of a user, and wherein, for the designated recognition function being the handwritten input recognition function, the at least part of the selected operation-plane image is changed in a manner that tracks the handwriting motion, wherein the tracking of the handwriting motion is visible on the selected operation-plane image according to the change in the at least part of the selected operation-plane image being projected. Claims 12 and 13 depend directly or indirectly from independent claim 6.

Independent claim 7, as amended herein, recites a mobile communication terminal including an image projection means for projecting a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device operated by users. Operation detection means detects operation on the operation-plane image projected by the image projection means. Data processing means for performing a predetermined data process based on the detection result of operation detected by the operation detection means. Memory means for stores a plurality of image data corresponding to each one of the plurality of operation-plane images. Application execution management means executes an application program selected from a plurality of kinds of application programs that is downloaded via a mobile communication network, wherein the application execution management means selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. Instruction generation means generates an operation-plane image selection instruction in accordance with content of the selected application program. The image projection means selects an image data from the plurality of image data memorized in the memory based on the operation-plane image selection instruction generated by the instruction generation means, and projects the operation-plane image of the selected image data. The application execution management means performs a data process corresponding to operation detected by the operation detection means in accordance with the content of the application program during execution of the selected application program and in accordance with the designation information that designates the recognition function. At least one of the plurality of kinds of mutually different recognition functions is a handwritten input recognition function that detects movements of the operation object corresponding to a handwriting motion of a user, and wherein, for the designated

recognition function being the handwritten input recognition function, the at least part of the selected operation-plane image is changed in a manner that tracks the handwriting motion, wherein the tracking of the handwriting motion is visible on the selected operation-plane image according to the change in the at least part of the selected operation-plane image being projected. Claims 12 and 13 depend directly or indirectly from independent claim 7.

Independent claim 15, as amended herein, recites a mobile communication terminal. An image projector projects a selected one of a plurality of predefined operation-plane images that displays virtually an operation-plane of an operation device. An operation detector detects operation on the operation-plane image projected by the image projector. A data processor performs a predetermined data process based on the detection result of operation detected by the operation detector. An application execution management device manages an execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network, wherein the application execution management device selects the selected one of the plurality of predefined operation-plane images for projection according to content of the application program and generates designation information that designates a recognition function corresponding to the selected predefined operation-plane image. The image projector projects an operation-plane image corresponding to the recognition function designated by the designation information received from the application execution management device, from among the plurality of predefined operation-plane images. The operation detector has a plurality of kinds of mutually different recognition functions to recognize operation content by at least one of position, direction and movement of an operation object on the plurality of predefined operation-plane images, and detects operation on the operation-plane image by using the recognition function designated by the designation

information received from the application execution management device. At least one of the plurality of kinds of mutually different recognition functions is a handwritten input recognition function that detects movements of the operation object corresponding to a handwriting motion of a user, and wherein, for the designated recognition function being the handwritten input recognition function, the at least part of the selected operation-plane image is changed in a manner that tracks the handwriting motion, wherein the tracking of the handwriting motion is visible on the selected operation-plane image according to the change in the at least part of the selected operation-plane image being projected. Claims 16-18 depend from independent claim 15.

Rafii discloses a method and apparatus for entering data using a virtual input device. A user inputs digital data to a companion system using a virtual input device and a sensor captures three-dimensional positional information as to location of the user's fingers in relations to where keys would be on an actual keyboard. The Office Action cites principally to col. 4, lines 27-33, col. 7, lines 16-18, col. 10, lines 27-34 and col. 12, lines 33-47 and Figs. 1A and 3 of Rafii. The Office Action (page 3) notes that Rafii does not disclose an application execution management means for managing application program execution environment of an application program selected from a plurality of application programs that is downloaded via a mobile communication network.

Fong discloses a method and apparatus for providing projected user interface for a computing device. The Office Action cites principally to Fig. 3 and paragraph [0019] of Fong as disclosing that visual feedback for a user in response to an action on the virtual keyboard image including "changing of the color of the shape of key 106 on virtual keyboard image 105."

Kloba discloses a system, method and computer program product for customizing channels, content and data for mobile devices. The Office Action cites to Kloba as disclosing the feature of an application execution management means for managing execution environment of an application program selected from a plurality of application programs downloaded via a mobile communication network, citing specifically to col. 4, lines 37-41; col. 7, lines 5-9; and col. 11, lines 15-21 of Kloba.

Brinjes discloses a user interface device. The Office Action cites to Brinjes as disclosing use of a handwriting input function for recognizing handwriting input, citing specifically to paragraphs [0075]-[0076] (pages 5-6) of Brinjes.

Applicant's independent claims recite that at least one of the plurality of kinds of mutually different recognition functions is a handwritten input recognition function that detects movements of the operation object corresponding to a handwriting motion of a user, and wherein, for the designated recognition function being the handwritten input recognition function, the at least part of the selected operation-plane image is changed in a manner that tracks the handwriting motion. Applicants have further specifically clarified with amendments herein that the *tracking of the handwriting motion is visible on the selected operation-plane image according to the change in the at least part of the selected operation-plane image being projected* (see, e.g., paragraph [0086] of the originally-filed specification). For further illustrative explanation and support, Applicant refers, for example, to the discussion at paragraphs [0083]-[0087] and Figs. 22, 23 of the originally-filed specification. As discussed, Applicant's recited system provides for a system that may detect and respond to handwritten

motion input in connection with the changing of part of an operation-plane image that is projected in a manner that tracks the handwriting motion of the user.

Neither Rafii nor Kloba disclose the changing of a projected image during operation according to detected content of the operation like that recited by Applicant. This has been previously discussed by Applicant and is noted in the Office Action (see, e.g., page 4 of the Office Action). However, the Office Action cites to Fig. 3 and paragraph [0019] of Fong which discloses that visual feedback for a user in response to an action on the virtual keyboard image including "changing of the color of the shape of key 106 on virtual keyboard image 105." Further, the Office Action (e.g., page 5) notes that neither Rafii, Kloba nor Fong disclose use of a handwritten input function for recognizing handwritten input and cites to paragraphs [0075]-[0076] of Brinjes as disclosing a projected virtual input writing device with a handwriting recognition function.

However, Applicants respectfully submit that nothing in the disclosure of Brinjes discloses that the at least part of the selected operation-plane image is changed in a manner that tracks the handwriting motion, specifically in which *the tracking of the handwriting motion is visible on the selected operation-plane image according to the change in the at least part of the selected operation-plane image being projected*, as is presently recited by Applicants. That is, referring for example to Figure 23 of the Applicant's originally-filed specification, Applicant's system provides that at least part of the projected operation-plane image is changed to track the handwriting motion. Applicant's system enables that the user can recognize the tracking of handwritten input corresponding to the change of operation-position self-operated, and can thereby keep track of the text characters that are being self-drawn by looking at the visible

tracking of the handwriting motion on the projected operation-plane image. Users may immediately notice that they have not properly drawn text characters intended by them, because, they can confirm the text characters drawn themselves while watching the handwritten input operation-plane image that is subject to the user's own operation. (See, e.g., paragraph [0086] of the originally-filed specification.)

In contrast, the cited disclosure of Brinjes (paras. 0075 and 0076; refer also to Fig. 8 thereof) discloses merely that a keyboard processor stores the position of a stylus (or finger) tip and then determines the input character by using conventional handwriting recognition techniques. There is no disclosure in Brinjes that *the tracking of the handwriting motion is visible on the selected operation-plane image according to the change in the at least part of the selected operation-plane image being projected,* like that recited by Applicants (compare, for example, Brinjes Figure 8 and Applicant's Figure 23). Thus, Applicants respectfully submit that the addition of Brinjes does not overcome the above-noted deficiencies of the other cited prior art references with respect to Applicant's present claims.

Accordingly, Applicant submits that Rafii, Fong, Kloba and Brinjes, taken alone or in any combination, do not teach or fairly suggest at least the above-noted features as presently recited by Applicant. In view of the above, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of claim 12, 13, 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over Rafii in view of Fong, Kloba and Brinjes and further in view of U.S. Patent App. Pub. No.

2002/0075240 to Lieberman (hereinafter "Lieberman") is hereby traversed and reconsideration is respectfully requested in view of the amendments to the claims contained herein.

The features of independent claims 4, 6, 7 and 15 are discussed above with respect to Rafii, Fong, Kloba and Brinjes. Claims 12, 13, 16 and 17 depend therefrom.

Lieberman discloses a virtual data entry device and method for input of alphanumeric and other data. The Office Action cites to Lieberman as disclosing features of use of a light source, a spatial light modulation unit and an optical system, as recited by Applicant in claim 12, citing specifically to paragraphs 0184, 0186, 0135 and Figs. 28 and 29 of Lieberman.

Applicant respectfully submits that the addition of Lieberman does not overcome the above-noted deficiencies of Rafii, Fong, Kloba and Brinjes with respect to the presently-claimed invention. Lieberman does not disclose, nor is Lieberman cited in the Office Action in connection with, Applicant's recited features that are discussed above with respect to Rafii, Fong and Kloba. Accordingly, Applicant respectfully submits that the cited prior art, taken alone or in any combination, do not teach or fairly suggest at least the above-noted features as recited by Applicant. In view of the above, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 508-898-8603.

Respectfully submitted,
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